REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-4 and 12-14 are pending in this application. Claims 1 and 12 are independent. The remaining claims depend, directly or indirectly, from claims 1 and 12.

Objections

In the action, the Examiner objected to paragraphs [0014], [0018], and [0019] of the specification because they discussed reference letters not contained in the figures. Figure 1 has been amended in this reply in view of this objection. Paragraphs [0019] and [0020] were objected to because they specified incorrect reference letters or numbers. Paragraphs [0019] and [0020] have been amended in view of this objection.

The Examiner objected to the format of the claim labels. The claims have been amended accordingly in view of this objection.

The Examiner objected to claims 13 and 14 being dependant on a canceled claim (i.e. claim 5). The Applicant respectfully notes that in the Preliminary Amendment claims 13 and 14 were amended to depend on claim 12. The objection is respectfully traversed.

No new matter has been added in any of the above amendments. Withdrawal of these objections is respectfully requested.

Rejections under 35 U.S.C. § 112

Claims 1-4 and 12-14 stand rejected under 35 U.S.C. § 112 as indefinite. This rejection is respectfully traversed.

Polycrystalline diamond compact (PDC) bits are a type of bit used to drill wellbores through earth formations. One way to manufacture PDC bit bodies is by casting. In the casting process, molds are created and filled with a mixture of tungsten carbide grains and a binder alloy. After creation of the drill bit body, cutting elements are mounted onto the drill bit body. Cutting elements are formed from natural and /or synthetic diamond, referred to as a diamond table, affixed to a cylindrical tungsten carbide substrate.

In order to affix the cutting elements to the drill bit body, mounting pads must be created on the drill bit body. The claimed invention uses substantially cylindrical displacements affixed to the mold during the casting process to create mounting pads on the drill bit body. In addition to the displacement creating a mounting pad, a projection that extends out of the displacement creates a relief groove within the drill bit body. More specifically, the claimed invention manipulates the size of the projection based on the thickness of the diamond table and how much the diamond table extends past the surface of the bit body to create a relief groove that will best reduce diamond table breakage and failure of the bit. As explained on pages 6-7 of the specification, in the invention has determined that diamond table breakage is reduced efficiently when the width of the relief groove is selected so that the groove extends back at least 40 percent of that portion of the diamond table which does not extend past the edge of the blade, the part of the drill bit body which includes one or more of the mounting pads. The Applicant respectfully submits that one of ordinary skill would recognize how drill bit bodies could be

made by the methods specified in claims 1 and 12 to create a drill bit with increased bit life. Accordingly, withdrawal of the §112 rejections is respectfully requested.

Rejections under 35 U.S.C. § 102

Claims 1 and 12 stand rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent No. 4,844,185 ("Newton"). This rejection is respectfully traversed.

Claims 1 and 12 recite a method of forming drill bit bodies that comprises infiltrating powdered tungsten carbide with a binder alloy in a mold, the mold having therein at least one displacement adapted to form a mounting pad for a cutting element. Claims 1 and 12 further recite a displacement comprising a substantially cylindrical body having a diameter selected to substantially conform to a radius of the cutting element and a projection adapted to form a relief groove under a position of a diamond table in the cutting element when the cutting element is mounted on the pad.

Newton discloses a rotary drill bit comprised of a bit body having a leading face and a gauge region, cutting elements mounted at the leading face of the bit body, and a passage in the bit body for supplying drilling fluid to the face.

Newton fails to disclose using displacements in forming a drill bit body, so that the displacements will create mounting pads and relief grooves within the drill bit body. Newton is silent as to forming a drill bit body using displacements. Rather, Newton simply recites that a drill bit body is typically formed of carbide matrix infiltrated with a binder alloy (col 4, lines 25-26). The Applicant is unaware of any disclosure in Newton and the Examiner has failed to show any disclosure in Newton that recites all of the elements required by claims 1 and 12. Therefore, claims 1 and 12 are not anticipated by Newton.

To the extent that the Examiner believes that the recited structure limitations of claims 1 and 12 do not affect the method in a manipulative sense; and therefore, should be given little patentable weight, the Applicant notes that the dimensions and placement of a displacement would affect the formation of the mounting pad and relief groove. In other words, the dimensions and placement structurally affect the mounting pad and relief groove. Accordingly, claims 1 and 12 and all claims dependant therefrom are patentable for at least the same reasons.

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516/084002).

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Respectfully submitted,

By _____

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Attachments

AMENDMENTS TO THE DRAWINGS

Please amend Figure 1 as shown in the enclosed replacement sheet. Figure 1 has been amended to include the reference letters: L, D, and W. No new matter has been added.